

REMARKS

The Amendment, filed in response to the Office Action (“Action”) mailed January 12, 2009, is believed to fully address all issues raised in the Action. Favorable reconsideration of the application is respectfully requested.

Claims Disposition

Applicant thanks the Examiner for entering the Amendment filed September 29, 2009.

Claims 3-5 are all the claims pending in the application. Claims 1-2 were previously canceled.

Upon entry of the amendment, which is respectfully requested, claim 3 will be amended to clarify the feature of the claimed subject matter. No new matter is introduced.

Information Disclosure Statement

Applicant notes that the Office has not returned an initialed copy of the SB/08 Form submitted with the Information Disclosure Statement filed on May 22, 2008. Accordingly, Applicant respectfully request the Examiner consider the IDS and, if considered, return an initialed copy along with a next Office Action.

Response to Claim Rejections Under 35 U.S.C. § 102

In the Action, claims 4 and 5 are rejected under 35 U.S.C. 102(b) as assertedly being anticipated by Kusumoto US Application Publication No. 2004/0029007 (“Kusumoto”).

Claims 4 and 5 are also rejected under 35 U.S.C. 102(b) as being anticipated by Takeda et al. Material s Research Bulletin, Vol. 29 (“Takeda”).

The Office asserts that Kusumoto and Takeda each teach a non-aqueous electrolyte battery comprising an oxide containing mainly iron and sodium, and the limitations with respect to the electrode material having a hexagonal crystal structure and exhibiting a value of 2 or less obtained by dividing the XRD peak intensity corresponding to an interplanar spacing of 2.20 angstrom by the XRD peak intensity corresponding to an interplanar spacing of 5.36 angstrom is considered an inherent property, as Kusumoto teaches the same electrode material as disclosed by Applicant. Pages 3-5 of the Action.

Applicant respectfully disagrees at least for the following reasons.

Kusumoto teaches at paragraph 0012, "lithium ions are transferred between the positive electrode and the negative electrode, to perform discharge/charge." Thus, Kusumoto expressly teaches that the charge carrier is lithium ions, as opposed to sodium ions that are recited in claim 4 of the instant application. Accordingly, Kusumoto fails to teach all and every element of claim 4, and thus cannot anticipate the subject matter of claim 4.

Furthermore, Applicant submit that the Office fails to provide any scientific explanation or evidence showing that Kusumoto's composition necessarily exhibits the value of 2 or less obtained by dividing the XRD peak intensity corresponding to an interplanar spacing of 2.20 angstrom by the XRD peak intensity corresponding to an interplanar spacing of 5.36 angstrom. Nowhere in Kusumoto is information or disclosure of XRD peak intensity of a crystal structure and it is not possible for one skilled in the art to assess if the composite oxide has a crystal structure satisfying the above requirement.

As the Court and the MPEP repeatedly emphasize, "(in order) to establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary

skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted); "Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Wahlen II* (Bd. App. Int. 2007-5523, decided July 23, 2007) citing *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981); See also *Ex parte Skinner*, 2 USPQ2d 1788, 1789 (BPAI 1986) ("[T]he examiner must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art" before the burden is shifted to the applicant to disprove the inherency.)."

Applicant respectfully submits that the Office has not provided evidence or scientific reasoning to show that any specific oxide disclosed by Kusumoto is within the scope of the instant claims 4 and 5, and therefore has not made out a case of inherent anticipation by Kusumoto.

With respect to the Office's assertion that claim 4 is anticipated by Takeda, Applicant respectfully traverses as follows.

As defined in the claim 4, the composite oxide of the present invention exhibits a value of 2 or less obtained by dividing the XRD peak intensity corresponds to an interplanar spacing of 2.20 Å by the XRD peak intensity corresponding to an interplanar spacing of 5.36 Å.

In contrast, according to the composite oxide of Takeda, the value obtained by dividing the XRD peak intensity corresponds to an interplanar spacing of 2.20 Å (namely, (003)) by the XRD peak intensity corresponding to an interplanar spacing of 5.36 Å (namely, (104)=(014) is

2.3 as disclosed in the paragraph 0012 of the specification and as illustrated below and does not satisfy the condition of the claim 4.

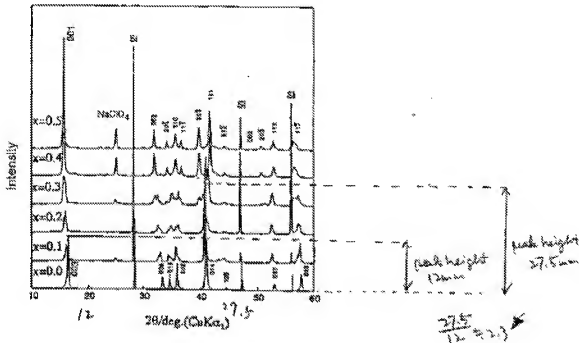


FIG.2
XRD patterns of $\text{Na}_{1-x}\text{FeO}_2$ for
various charge depths ($x=0-0.5$).

Additionally, as disclosed in Takeda, page 665, lines 410, the charge carrier of Takeda is also lithium ions, as opposed sodium ions defined in the present claim 4.

Accordingly, Takeda fails to anticipate all and every element of claim 4 and its dependent claim 5. Furthermore, Takeda clearly fails to teach the limitation “exhibiting a value of 2 or less ... interplanar spacing of 5.36 Å” of claim 5 as evidenced above.

Therefore, the rejections of claims 4 and 5 under 35 U.S.C. § 102(b) are not sustainable and withdrawal is respectfully requested.

Response to Claims Rejections Under 35 U.S.C. § 103

At pages 6-7 of the Action, claim 3 is rejected under 35 U.S.C. 103(a) as being assertedly unpatentable over Takeda.

Applicant notes that Takeda was cited in the previous Office Action to reject claim 3 and the Examiner has withdrawn the previous rejection, but raises a new rejection with additional reasoning.

The Office reiterates the previous rationale and, with respect to the limitation “wherein the mixture is heated in an inert atmosphere in the temperature range of lower than 100°C in the course of rising of the temperature” of claim 3, the Office asserts that it would have been obvious to employ the above temperature range, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art; and that Applicant recognizes that the heating temperature directly effects surface characteristics of the active material and thus, cycle life, storage capacity and electrode utilization.

Applicant respectfully traverses the rejection.

Takeda merely discloses "the mixture of Na_2O_2 and Fe_3O_4 in a 3:2 molar ratio was heated at 600-700°C for 12 hours (page 660, Experimental)." There is no disclosure about the feature of the present invention that "wherein the mixture is heated in an inert atmosphere at a temperature of lower than 100°C in the course of rising of the temperature."

It has been known that a process for producing a composite oxide does not require a strict control of reaction atmosphere. Therefore, one skilled in the art would not have been motivated to employ a hard conditions, i.e., heating the mixture in the inter atmosphere at a certain course of heating. Applicant further submits that, even though a reaction temperature is a variable

effecting results of the process, there was no suggestion in Takeda or in the art to employ the specific way of controlling the reaction atmosphere as defined in claim 3.

The subject matter of claim 3 is a method for producing an active material suitable for a sodium secondary battery. In contrast, Takeda relates to a lithium battery and therefore is not a proper reference for assessing the patentability of the present invention, which is a method for producing an active material for sodium secondary battery.

Finally, Applicant submits that the claimed process and composition show advantageous effects as discussed in the specification, for example paragraphs [0035]-[0037] on pages 18-19.

In conclusion, Applicant believes that the rejection is not sustainable and its withdrawal is respectfully requested.

Response to Examiner's Response to Applicant's Arguments

Applicant thanks the Examiner for providing responses to Applicant's arguments.

Applicant notes that the Examiner responds to the Applicant's arguments that Kusumoto or Takeda fails to teach a sodium secondary battery, by commenting that this argument is not persuasive because (1) Kusumoto at claim 3 teaches that the battery is secondary, and the instant battery contains the same materials as the instant claims, and (2) the secondary battery is only recited in the preamble and has been considered, but does not impart patentable weight because it is not necessary for completeness of the claim.

In response, claim 3 is amended to clarify the feature of the subject matter and to address the Examiner's concern expressed in the Action. It is believed that the currently amended claim 3 addresses the above issue.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number **202-775-7588**.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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